What is claimed is:

1. A method of forming a damascene structure comprising:

(a) providing a substrate having a feature defined through a first dielectric layer formed on a barrier layer comprising one of a silicon carbide (SiC) layer and a silicon carbon nitride (SiCN) layer deposited on a metal wiring layer;

(b) generating a plasma from a gas mixture comprising trifluoromethane (CHF_3); and

(c) etching the barrier layer using the plasma to transfer the feature therethrough to the metal wiring layer.

2. The method of claim 1 wherein the first dielectric layer comprises one of organosilicate (SiOC) and fluorosilicate glass (FSG).

3. The method of claim 1 wherein the gas mixture further comprises one or more gases selected from the group consisting of nitrogen (N_2), oxygen (O_2) and argon (Ar).

4. The method of claim 3 wherein the gas mixture comprises trifluoromethane (CHF_3) and nitrogen (N_2) at a CHF_3:N_2 flow ratio of 30:50.

5. The method of claim 3 wherein the gas mixture comprises trifluoromethane (CHF_3) and oxygen (O_2) at a CHF_3:O_2 flow ratio of 30:10.

6. The method of claim 3 wherein the gas mixture comprises trifluoromethane (CHF_3), oxygen (O_2) and argon (Ar) at a CHF_3:O_2:Ar flow ratio of 30:10:50.

7. A method of forming a damascene structure comprising:

(a) providing a substrate having a feature defined through a first dielectric layer formed on a barrier layer comprising one of a silicon carbide (SiC) layer and a silicon carbon nitride (SiCN) layer deposited on a metal wiring layer;

(b) generating a plasma from a gas mixture comprising trifluoromethane (CHF_3) one or more gases selected from the group consisting of nitrogen (N_2), oxygen (O_2) and argon (Ar); and

(c) etching the barrier layer using the plasma to transfer the feature therethrough to the metal wiring layer.

8. The method of claim 7 wherein the first dielectric layer comprises one of organosilicate (SiOC) and fluorosilicate glass (FSG).

9. The method of claim 7 wherein the gas mixture comprises trifluoromethane (CHF_3) and nitrogen (N_2) at a CHF_3:N_2 flow ratio of 30:50.

10. The method of claim 7 wherein the gas mixture comprises trifluoromethane (CHF_3) and oxygen (O_2) at a CHF_3:O_2 flow ratio of 30:10.

11. The method of claim 7 wherein the gas mixture comprises trifluoromethane (CHF_3), oxygen (O_2) and argon (Ar) at a CHF_3:O_2:Ar flow ratio of 30:10:50.

12. A computer-readable medium containing software that when executed by a computer causes a semiconductor wafer processing system to form a damascene structure comprising the steps of:

(a) providing a substrate having a feature defined through a first dielectric layer formed on a barrier layer comprising one of a silicon carbide (SiC) layer and a silicon carbon nitride (SiCN) layer deposited on a metal wiring layer;

(b) generating a plasma from a gas mixture comprising trifluoromethane (CHF_3); and

(c) etching the barrier layer using the plasma to transfer the feature therethrough to the metal wiring layer.

13. The computer-readable medium of claim 12 wherein the first dielectric layer comprises one of organosilicate (SiOC) and fluorosilicate glass (FSG).

14. The computer-readable medium of claim 12 wherein the gas mixture further comprises one or more gases selected from the group consisting of nitrogen (N_2), oxygen (O_2) and argon (Ar).

15. The computer-readable medium of claim 14 wherein the gas mixture comprises trifluoromethane (CHF_3) and nitrogen (N_2) at a CHF_3:N_2 flow ratio of 30:50.

16. The computer-readable medium of claim 14 wherein the gas mixture comprises trifluoromethane (CHF_3) and oxygen (O_2) at a CHF_3:O_2 flow ratio of 30:10.

17. The computer-readable medium of claim 14 wherein the gas mixture comprises trifluoromethane (CHF_3), oxygen (O_2) and argon (Ar) at a CHF_3:O_2:Ar flow ratio of 30:10:50.